



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

D204-635-041
Job Sheet 169941

Part No: D204-635-041
Job Qty: 1 ea
Part Name: Replacement Skidtube with Standard Wearplates Fits LH or RH



Part Weight: 0 lbs
Status: Scheduled
Priority: Medium

Job Tracking No:

Created By: Mario Poulin

Description:

Note: URF 17-569 DWG REV F SHEETS 1,2,3,6 IPP REV:F 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ IPP REV:G 07-07-09 Added SS Wearplates & Gaskets JLM IPP REV:H: add identify and stock seq DD 10.01.28 ver:EC IPP REV:I 10.12.01 as per DEO DD ver:EC IPP REV:J 12.01.23 AS PER ECN11-684 DD VERF:EC

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Setup Run	Hrs	Workcenter / Supplier	Lead Time	Sign-off
90	Start up Operation	1 Ea	2/1/18		0.00	0.00	Start Up Skidtube-1		
110	Skidtube	1 pcs	2/1/18		0.00	1.00	Skidtube-1		
113	QC	1 pcs	2/1/18		0.00	0.00	QC7-1		
116	Skidtube	1 pcs	2/1/18		0.00	1.00	Skidtube-1		
118	QC	1 pcs	2/1/18		0.00	0.00	QC5		
120	CNC Bend Skidtube	1 pcs	2/1/18		0.00	1.12	CNC Bend Skidtube		
130	Skidtube	1 pcs	2/1/18		0.00	1.00	Skidtube-1		
140	QC	1 pcs	2/1/18		0.00	0.00	QC6		
150	Skidtube	1 pcs	2/1/18		0.00	1.00	Skidtube-1		
160	QC	1 pcs	2/1/18		0.00	0.00	QC10		
170	QC	1 pcs	2/1/18		0.00	0.00	QC6		
175	HandFinish	1 pcs	2/1/18		0.00	0.10	HandFinish2		
180	Powdercoat	1 pcs	2/1/18		0.00	0.46	Powdercoat1		
190	QC	1 pcs	2/1/18		0.00	0.00	QC3		
200	HandFinish	1 pcs	2/2/18		0.00	1.67	HandFinish4		
210	QC	1 pcs	2/2/18		0.00	0.00	QC5		
213	DC	1 pcs	2/2/18		0.00	0.00			
215	Packaging	1 pcs	2/2/18		0.00	0.00	Packaging3-1		
220	QC21-FG	1 Ea	2/2/18		0.00	0.00	QC21		

Part Op 110 - 1-Inspect mat'l D2500-1-190 for damage 2-Cut D2500-1-190 per Dwg D2590. Deburr ends 3-Drill pilot holes using Descriptions: drill jig DT 8149 & DT8711-1&-2 and open to finish size as per dwg 4-Deburr holes as per QSI002 section 4.2.3 and blow out all chips from inside of tube. Test fit DT9916 on fwd and aft saddles. 5-Acid etch and Alodine tube per QSI 005 4.1

113 - QC7-Inspect Chemical Conversion Coat

116 - 1-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting. Pick: Qty Part Number Description Batch

A/R Sikaflex-291 Sikaflex expire date: 2016-04-31 Start Time: 5:26 PM Fin Time:

118 - QC5-Inspect part completeness to step on W/O

120 - Bend as per program D2590.C on CNC Bender

130 - 1-Cut tubes as per Dwg. D2590. 2-Deburr ends after cutting.

140 - QC6- All purchased or subcontracted products

150 - 1-Prepare tube for welding D2576-3 Step Remove alodine as required. 2-Weld step D2576 as per Dwg. D2590 and QSI 004 A/R Aluminum Rod

153-Grind weld flush on step 4-Insert D4202-1 spacer, swage as per QSI002 and trim/ grind flush per QSI002 and as per dwg 5-Drill holes for wearplates using DT 8218 & DT8937 Open holes to 19/64".

adjust stopper not to hit web. Deburr 6-Drill pilot holes for aft cap using DT 8215 Open holes to #6 Drill bit. Deburr 7-Drill

5040609x1

QA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐		 S040609 DART AEROSPACE Replacement Skidtube with Standard Wearplates Fis LH or RH	
Date : _____		Step #: _____		QTY Effective _____			
Description Work Order Deviation							
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐		Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defec ☐ Inspection Incomplete, ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete ☐ Drill Holes ☐	
OTHER : _____							

Revision:
Operation:
Change No:
PART NO: D204-635-041
Original Serial #: S040609

Start up Operation 02/08/18
Job No: 169941

Dart Aerospace Ltd.
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 Hawkesbury, ON K6A 1K7
 CANADA
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 Email: sales@dartaero.com
 www.dartaerospace.com

pilot holes for Tow ring using DT9425, open to .640" and Deburr ****verified dim. before drilling****

160 - QC10- Inspect visual per QSI004- ground welds

170 - QC6- All purchased or subcontracted products

175 - Pressure Wash per QSI005 4.3 Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

180 - White Gloss (Ref 4.3.5.1) per QSI005 4.3-Alum START TIME: 7:55 OVEN TEMPERATURE: 320°

FINISH TIME: 8:25 11/18/07

190 - QC3- Inspect Part Finish

200 - 1-Install inserts & wearplates & gaskets using a drop of Sikaflex on insert holes before installing wearplates A/R

Sikaflex-291 1138654 Sikaflex expire date: 18/04 2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580 3-Inspect for foreign object per QSI 024 4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive A/R Sikaflex-291 1138654 Sikaflex expire date:

18/04 5-Wing Walk as per Dwg D2590 and QSI 005 4.4 Batch: 1138714

210 - QC5- Inspect part completeness to step on W/O

213 - Document Control Photocopy bluefile & type labels per PPP D204-635-041 CHG 005

215 - Identify as per dwg & Stock Location: _____

220 - QC21- Final Inspection - Work Order Release

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D2500-1-190 <u>5630536</u>	1	116	0	0
	D2597 <u>B153676</u>	1	4	0	0
150-Skidtubes	D2576-3 <u>B156023</u>	1	58	0	0
<u>200</u>	D4202-1 <u>5030798</u>	17	719	0	0
<u>180</u> -Powdercoat <u>AL54</u>	AL87 1032-130 <u>3007279</u>	44	10	0	0
	AN3-5A <u>5013757-1</u>	2	455	0	0
	AN3C4A <u>5019394</u>	44	2,363	0	0
	D2594-1 <u>5025442</u>	10	526	0	0
	D2594-3 <u>5035836</u>	10	147	0	0
	D2855 <u>F157613</u>	1	80	0	0
	D3564-11 <u>5040746</u>	1	35	0	0
	D3564-13 <u>5024217</u>	1	21	0	0
	D3564-7 <u>5042949</u>	1	9	0	0
	D3564-9 <u>5031934</u>	1	17	0	0
	D3566 -1	2	25	0	0
	D3566 -13	1	4	0	0
	D3566 -7	1	5	0	0
	NAS1149C0332R <u>5019380</u>	44	4,843	0	0
	NAS1149D0332J <u>5021606</u>	2	668	0	0

Part Specifications

Specifications could not be found.

Plex 1/3/18 2:28 PM dart.poulin.mario

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; font-size: small;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																		
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																		
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																		
Large Fab ☐	Composite ☐	Supplier ☐																			
Date : <u>10/2/9</u>	Step #: <u>120</u>	QTY Effective :		MRB (QSI042) Approval DAS 12 9-89 <u>10/2/9</u>																	
Description Work Order Deviation			Disposition																		
<u>Aft bend is 1.26" high.</u>			<u>Acceptable - Does not effect strength or function of the skid tube</u>																		
			Completed By DAS 12 9-89 <u>10/2/9</u>																		
			Lead hand / Supervisor Approval Verification																		
			QC / QA Coordinator Approval																		
Root Cause		FAULT CATEGORY																			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐																
OTHER : _____																					

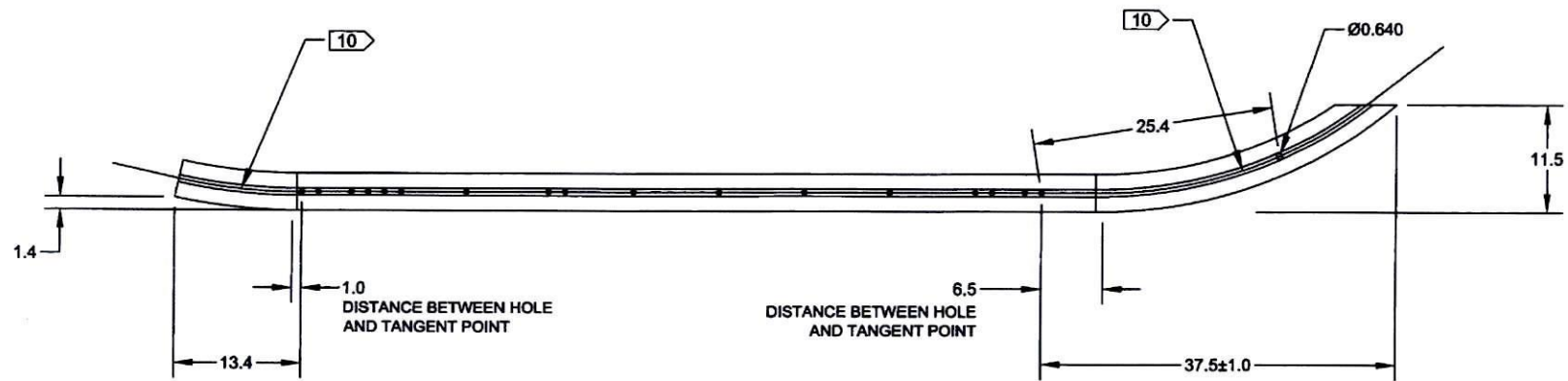
LIST OF MATERIALS				
ITEM	QTY -041	QTY -043	PART NUMBER	DESCRIPTION
1	X		D2590-041	SKIDTUBE ASSEMBLY
2		X	D2590-043	SKIDTUBE ASSEMBLY
3	1	1	D2500-1-190	EXTRUSION
4		16	D2570	BUSHING
5	1	1	D2576-3	STEP
6	10	4	D2594-1	PLUG
7	10	4	D2594-3	O-RING
8	1	1	D2597	204 WEB
9	1	1	D2855	AFT CAP
10	1		D3564-7	WEARSHOE
11	1		D3564-9	WEARSHOE
12	1		D3564-11	WEARSHOE
13	1		D3564-13	WEARSHOE
14	2		D3566-1	GASKET
15	1		D3566-7	GASKET
16	1		D3566-13	GASKET
17	17	22	D4202-1	SPACER
18		1	D4408-041	WEARPLATE ASSEMBLY
19		1	D4408-043	WEARPLATE ASSEMBLY
20	44		ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
21	44		AN3C4A	BOLT
22	2	2	AN3-6A	BOLT
23		8	AN4-45A	BOLT
24	44		NAS1149C0332R	WASHER (AN960C10L)
25	2	2	NAS1149D0332J	WASHER (AN960JD10L)
26		8	MS21042-4	NUT (OR MS21042L4)

GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2597 WEB
POWDER COAT ASSEMBLY GLOSS WHITE 4.3.5.1 PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D2590-041 = 31.5 lbs
D2590-043 = 33.3 lbs
- 8) WELDING PER DART QSI 004.
- 9) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 10) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 11) USE DART DRILL TEMPLATE DT8218 ONLY FOR D2590-041 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION B-B (44 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/281.
- 12) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (10 PLACES FOR D2590-041 AND 8 PLACES FOR D2590-043).
- 13) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION.

RELEASED
2013-07-15

F	INCORPORATE DEO D2590-E-1 PER PAR12-218	DC	13.06.20
E	ADD D2590-043; DT8218 WAS TD2577-204 (ZN C4-1); REFORMATTED DRAWING TO CURRENT STANDARDS	RF	11.06.21
D	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124	PH	07.04.05
C	REDRAWN, INCLUDED DEO 9094/ 9097	CP	98.08.28
B	AS MANUFACTURED	DS	96.12.02
A	NEW ISSUE	DS	98.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	DC		
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 1 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	204 SKIDTUBE ASSEMBLY	NTS
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D2590-1 BENT TUBE
(MAKE FROM D2590-101 TUBE)

RELEASED
2013-07-15
MD

DESIGN	<i>HS</i>	DART AEROSPACE LTD	
DRAWN	DC	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	DD	D2590	SHEET 3 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	<i>HS</i>	204 SKIDTUBE ASSEMBLY	NTS
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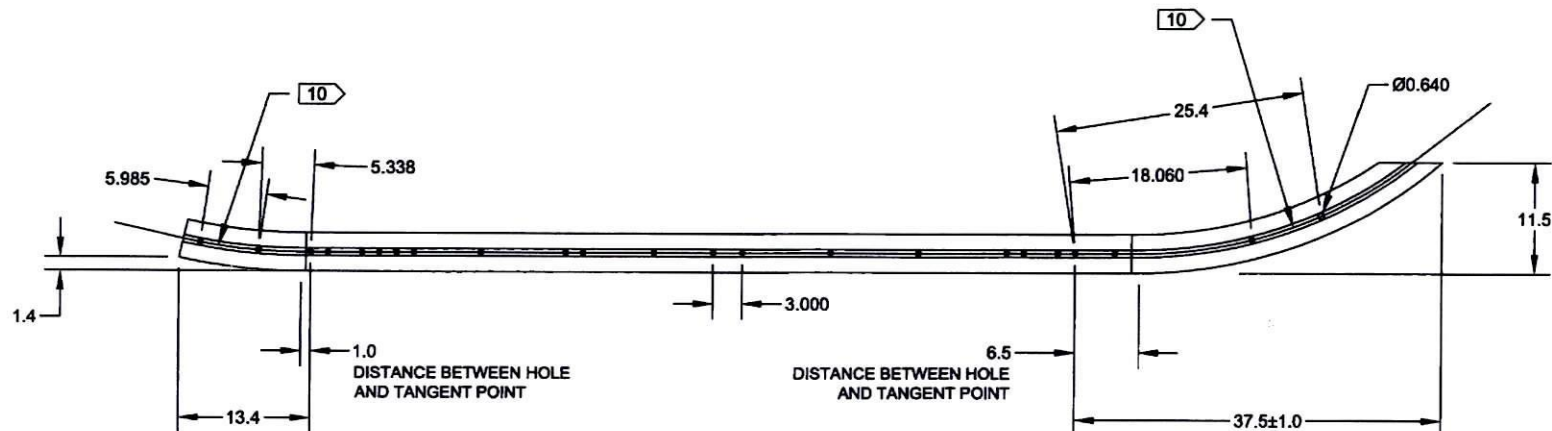
8 7 6 5 4 3 2 1

D

C

B

A



D2590-3 BENT TUBE
(MAKE FROM D2590-101 TUBE)

RELEASED
2013-07-15
MP

DESIGN	DC	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	DD	DRAWING NO.	REV. F
MFG. APPR.	HS	D2590	SHEET 5 OF 6
DE APPR.		TITLE	SCALE
DATE	13.06.20	204 SKIDTUBE ASSEMBLY	NTS
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8 7 6 5 4 3 2 1



Y.

Part Number: D204-635-041

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